

Physical Activity Level and Its Association with Mental Health and Quality of Life in Females during Menses

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ABSTRACT

Background: During a normal menstrual cycle, the lining of a woman's uterus sheds. This cycle is part of a woman's reproductive system and prepares the body for a possible pregnancy. It is also called a period, menses or cycle. A menstrual cycle is considered to begin on the first day of a period. The average cycle is 28 days long; however, a cycle can range in length from 21 days to about 35 days. Girls start menstruating at the average age of 12, but it can range from 8-16 years. The most common symptoms that is been seen during menses are Moodiness, Trouble sleeping, Food cravings, Cramps in the lower abdomen and back. Physical activity plays a key role in maintaining or improving an individual's wellness. Physical activity (PA) is beneficial for women's health as it is associated with a decreased risk of cardiovascular disease; breast and colon cancers; type 2 diabetes; osteoporosis; and other adverse health outcomes and also reduces the risk of depression and perceived stress levels. Some women report low physical activity level and energy level during the time of menses. Data from various literatures suggests that there is high prevalence of anemia in India and during menses, due blood loss, the severity level increases. During menses, due to blood loss, hormonal level fluctuations, there occurs extreme pain, mood swings, social stigma as a part of culture; all this alters the mental health status and quality of life.

Purpose of the study: To determine the Physical activity level in females during menses. The objective is to find the association of

Physical activity level with mental health and quality of life.

Methodology: A google form was shared in WhatsApp consisting of all 3 questionnaires (IAPQ- International Physical activity questionnaire short form), Quality of life was assessed through (WHOBREF). Mental health was assessed by General health questionnaire (GH-12). The consent and details of the study were also mentioned in the form. All the data were analysed.

Results: A total 100 responses were analyzed and out of that 55% were physically active and remaining 45% were inactive. For the association of PA level with quality of life and mental health status, there was a significant association ($p < 0.05$)

Conclusions: The overall PA level is 55% in this study. There is also positive influence of PA on general health aspects. Given that a proper understanding of physical activity and doing it on a regular basis can be effective in the health and life of young women and also improving the mental health status and overall quality of life. **Keywords:** Physical activity, mental health and Quality of life.

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INTRODUCTION

During a normal menstrual cycle, the lining of a woman's uterus sheds. This cycle is part of a woman's reproductive system and prepares the body for a possible pregnancy. It is also called a period, menses or cycle. The average cycle is 28 days long;

however, a cycle can range in length from 21 days to about 35 days¹.

Girls start menstruating at the average age of 12 with a range of (8-16 years of age). Women stop menstruating at menopause, which occurs at age around 45-55 years. Menopause is defined as one year without periods, and after this time a woman can no longer become pregnant¹. The most common symptoms that is been seen during menses are Moodiness, Trouble sleeping, Food cravings, Cramps in the lower abdomen and back, Bloating, Tenderness in the breasts, Acne. But sometimes the symptoms become unusual that requires medical attention like excessive bleeding, excessive pain, and no menses etc¹.

Physical activity (PA) plays a key role in maintaining or improving an individual's wellness (women's health). Regular physical activity decreases the risk of chronic diseases like breast and colon cancers; type 2 diabetes; osteoporosis; and other adverse health outcomes especially in females. Studies have further found evidence that physical activity enhances respiratory, muscle, cardiovascular, and cognitive functions and reduces the severity and occurrence of depression, stress level and maintains healthy lifestyle.²

Further studies states that lower energy level during menses, results in low level of physical activity. Newer studies states that regular exercises and physical activity results into lesser menstrual cramps^(2,3).

Prevalence of anemia was high among all women in India with a prevalence of 32.4% as mild, 14.19% as moderate and 2.2% with severe anemia. Data from the USA found obese and underweight women were at higher risk of vitamin deficiencies or anemia than normal-weight women⁴.

In India due to high prevalence of anemia, women during menses, feel more of tired, discomfort, fatigue and that may also result into lower energy level to perform activity⁴.

Women who bleed a lot describe a reduced quality of life; where almost a

quarter refrain from social activities, off sick from work due to this because of bleeding, according to the study. Over 90 per cent of these women find the bleeding to be bothersome and a higher percentage feel shabby^(5, 6).

Your menstrual cycle starts on the day of your period. Your levels of estrogen and progesterone are low at this time. Low levels of estrogen have an effect on the chemicals your brain releases. Studies have highlighted that low levels of estrogen are linked to low levels of serotonin, the "happy chemical" which leads to you feeling satisfied⁷.

The hormonal changes during your menstrual cycle may affect your mental health but your mental health may also have an impact on your menstrual cycle. Stress can shorten or stop your period. It can also make it more painful. Studies have found a link between people with stressful jobs and shorter menstrual cycles⁷. From various literatures, expert opinion and studies it has been seen that the level of energy, strength is reduced during menses. It has been seen that the level of physical activity might be considerably reduced during menses due to the above factors and many studies in the past concluded that regular exercise and physical activity could lead to longer and irregular cycles. This statement has been contraindicated by many present studies. There are many studies which have studies about physical activity during menses and effects of exercise on physical activity. But till the best of my knowledge all these studies have not quantitatively measured physical activity. The level of physical activity has been measured by face to face interview or by their statements. So this study will quantitatively measure the level of physical of women during menses. Also due to hormonal influence, pain, body ache, discomfort, there is alteration in mental status of women and these factors might lead to alterations in quality of life. So this study will also look the association of physical activity with mental health and overall quality of life.

- To determine the level of physical activity of females during menses.
- To find out association of Physical activity level with mental health and quality of life in females during menses.

MATERIALS & METHODS

Study Design- Cross-sectional study design

Sample Size- 100, calculated by Sample size calculator for Cross sectional study

Sampling Method- Convenient Sampling

Settings- Physiotherapist working as clinical or academics in Vadodara, Anand and Bharuch

Inclusion Criteria

1. Female participants.
2. Females of age 20-50 years.

Exclusion Criteria

1. Participants not willing to participate.
2. Females having pre-existing severe illness or any severe gynecological problems.

Procedure: After getting the approval from ethical committee of concerned institution, a google form was made consisting of all 3 questionnaires and the demographic characteristics. Physical activity was measured by International Physical activity questionnaire short form (IAPQ). Quality of life was assessed through WHO-BREF. Mental health was assessed by General health questionnaire (GH-12). All the questionnaires were standard, reliable and valid to assess the functions (8,9,10). The link of the form was sent to many females across the city, through WhatsApp. The description of the study and the consent was kept in the form. We send it to 150 participants and we got 100 responses back. For some participants who were not able to read the form or understand English, the authors translated into the convenient language and made them fill the form.

Statistical analysis

Data analysis was done using SPSS version 23.0. For estimation of Physical activity level in females during menses, descriptive analysis was done. For comparison of Physical activity level, with mental health status and quality of life, Kruskal Wallis test was done based on skewed distribution of data. $p < 0.05$

RESULT

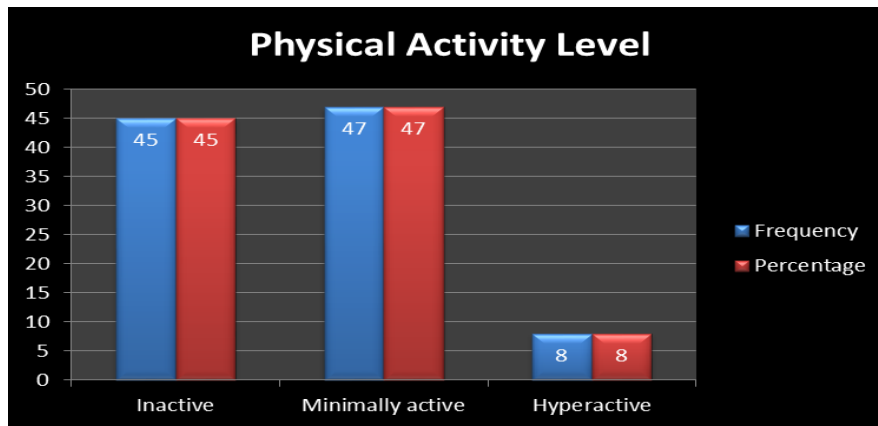
A total 100 participants responded to the form containing (questionnaires). The demographic characteristics of participants are shown in Table 1.

Table 1: Demographic and Socio-Demographic characteristics of Participants

Variables	N (%)	Mean \pm SD
Age	20-30	51(51)
	31-40	44(44)
	41-50	5(5)
	Over all	100
BMI	<18.5	08(8)
	18.5-24.9	30(30)
	25-29.9	35(35)
	>30	27(27)
Occupation	Working	90(90)
	Not Working	10(10)
Educational Qualification	Literate	95 (95)
	Illiterate	05(5)
Socio-Economic Status	Low	05 (5)
	Medium	75(75)
	High	20(20)
Marital Status	Married	56 (56)
	Non- Married	44 (44)
Cycle Length	<21 Days	05(5)
	21-27 Days	40(40)
	28-35 Days	45(45)
	>35 Days	10(10)
Duration of flow	<4	40(40)
	5-6	50(50)
	>7	10(10)
Menstrual blood loss	Scarce	20(20)
	Moderate	60(60)
	Abdunt	20(20)
Regular Periods	Yes	80 (80)
	No	20(20)
Severity of Dysmenorrhea	Yes	30(30)
	No	70(70)
Pain VAS		5.56 \pm 3.5

(N= No of Participants, % Frequency, SD-Standard Deviation, VAS- Visual analog Scale)

Physical activity level was analyzed by International Physical activity questionnaire short form (IAPQ). It is a standard, valid and reliable tool to assess Physical activity level. It gives the data in a quantitative form, which can be used as a prognosis aspect.



Graph 1: shows Physical Activity Level during the time of Menses.

Table 2: Classifications of Participants based on the Physical activity level

Sr. No	Level of Physical Activity	Frequency	Percentage	Mean (SD)
1	Inactive	45	45	553.22 ± 382.49
2	Minimally active	47	47	936.66 ± 973.64
3	Hyperactive	8	8	1176.66 ± 1193.49

55 individuals out of 100 were physically active. So the prevalence of physical activity level was 55%.

Table 3: Physical activity level based on Various Socio-Demographic Characteristics

Variables		Physically active N Total	Physically active total (%)	Physically active N (Moderate)	Physically active N (Vigorous)
Age	20-30 (51)	25	49	18	7
	31-40 (44)	27	61	15	12
	41-50 (5)	3	60	02	01
	Over all (100)	55	55	35	20
BMI	<18.5 (8)	4	50	4	0
	18.5-24.9 (30)	25	83	15	10
	25-29.9 (35)	18	51	12	6
	>30 (27)	8	29	8	0
Occupation	Working (90)	50	55	38	12
	Not Working (10)	5	50	2	3
Educational Qualification	Literate (95)	53	55	45	8
	Illiterate (5)	2	40	2	0
Socio-Economic Status	Low (5)	4	80	0	4
	Medium (75)	46	61	25	21
	High (20)	5	25	03	02
Marital Status	Married (56)	30	53	25	5
	Non- Married (44)	25	56	18	7
Cycle Length	<21 Days (5)	3	60	3	0
	21-27 Days (40)	25	62	15	10
	28-35 Days (45)	24	53	20	4
	>35 Days (10)	3	30	3	0
Duration of flow	<4 (40)	30	75	20	10
	5-6 (50)	23	46	18	5
	>7 (10)	2	20	2	0
Menstrual blood loss	Scarce (20)	18	90	10	8
	Moderate (60)	29	48	15	14
	Abdunt (20)	8	40	06	02
Regular Periods	Yes (80)	50	62	30	20
	No (20)	5	25	05	00
Severity of Dysmenorrhea	Yes (30)	10	33	9	1
	No (70)	45	64	35	10

(Figures next to the variable indicate frequency of participants within that particular variable, N- No of participants)

Table 4: Scores of the 4 QOL domains, overall QOL

Sr. No	Domains of WHO-BREF	Mean/SD
1	Physical Domain	55.25 ± 8.6
2	Psychological	68.96 ± 8.47
3.	Social Relationships	80.43 ± 20.95
4.	Environmental	50.83 ± 4.81

Table 5: Analysis of Mental health status

GH-12	Mean/SD	15.20 ± 5.25
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- The second objective was to determine the association of Physical activity level with mental health status and quality of life.

- So to analyze the data, first Shapiro-Wilk Test was used to determine the distribution of data.
- It showed Skewness of data. So to determine the association Kruskal-Wallis H test was used.

Table 6: Hypothesis Test Summary

Sr.No	Null Hypothesis	Test	Sig.	Decision
1	The distribution of WHO-BREF is the same across the categories of Physical activity level	Independent- Samples Kruskal- Wallis Test	0.026	Reject the Null Hypothesis.

(The significance level is 0.05)

*The test shows significant difference across the samples.

Table 7: Hypothesis Test Summary

Sr.No	Null Hypothesis	Test	Sig.	Decision
1	The distribution of GH-12 is the same across the categories of Physical activity level	Independent- Samples Kruskal- Wallis Test	0.045	Reject the Null Hypothesis.

(The significance level is 0.05)

*The test shows significant difference across the samples.

- The results showed that there is an association of physical activity level on mental health and quality of life in females during Menses.

DISCUSSION

The study wanted to find out the physical activity level of females during menses. It was found that out of 100 samples, the physical activity level (i.e. minimally active and hyper active) is 55%. Remaining were inactive (45%).

It was found that participants with younger age are more physically active participants than older group. But one thing must be considered here is the distribution of subjects in the age group. There are more subjects in younger than older group, so a definite conclusion could not be made. One of the reasons could be, which is supported by many studies is that physical activity is inversely proportional with age. Due to age related changes in musculoskeletal system, neurological system and in other systems, there might be reduced physical activity level in older age groups. Other possible reasons to explain this would be high demanding jobs for the younger group as compared to the older group which could lead to high PA level in younger group³.

More PA level was seen in lower socioeconomic group than medium and high. Many studies have alternate view on this point. Many studies have shown that high PA level in high socioeconomic group. But in this study, it was more in lower

group. A study done by Mohammad Talaei¹¹ et al concluded that in case of household PA, there is more for lower socio economic group than higher. It was seen that people with lower Socioeconomic status, even though they have a very little knowledge and awareness about the health, but due to their condition all the household work and other work are done on their own and even in transport, so physical activity level tends to be more in them¹¹.

High PA level was seen in normal BMI, than in others. With over weight and underweight body's ability to provide energy would reduce and that overall reduces the PA level. In case of obsess individuals, more amount of fat has been deposited and that increases overall weight. This puts more burdens on the body to carry out physical activity. In case of underweight also, less energy in the body prevents them to carry out regular physical activity, as the body becomes tired fast^(12,13,14).

In case of working and not working group, PA level was more in working group, but the nature of working; duration of sitting, nature of job, was not assessed in the study. As with working some amount of physical activity is needed so it was seen that the working group of participants had high level of PA¹⁵.

In the present study more PA level was seen in literate group compared to illiterate group. Although it is difficult to conclude on this statement because 95 participants were in literate group. But

many studies have concluded that literate people have more knowledge, awareness about health and factors leading to health. So there will be more PA level in them¹¹.

Married women tend to be more physically active than single. The present study also supports this statement. Married women with increased responsibility, having excessive increased household physical activity and leisure time physical activity¹⁶.

In case of association of PA level with menstrual characteristics, it was seen that with an average cycle of 21-27 days there was high PA level, and with 28-35 days. Less than 21 days and more than 21 days had lower PA level. Normally the menses comes at 21-27 days, i.e. every month any thing that alters homeostasis will lead to alterations in functions of the body and that will lead to altered PA level. Pain is always inversely proportional with PA level. With prevalence of Dysmenorrhea, pain and longer Flow rate there is always reduction in PA level. Menstruation demonstrates a specific function and interplay between several endocrine glands including the hypothalamus, pituitary, and ovaries. The regularity of the cycles reflects normal reproductive activity as well. Although several studies reported that there is no relationship between exercise and the regularity of menstruation, but many literatures suggest that these parameters were significantly related with each other.³

Menstrual pain, which is one of the most prevalent gynecological problems, is considered as a diminishing period for females. Although various researches from different parts of India have reported an increased rate of prevalence, the main reason for primary dysmenorrhea is still unclear and non-biological factors in the etiology of primary dysmenorrhea are less known. It is also believed that the frequency of primary dysmenorrhea reduces by doing exercise. Likewise, previous research revealed that the prevalence of primary dysmenorrhea and other menstrual symptoms is related to exercise.³

However, exercise seems to improve the blood flow at the pelvic and provokes the release of endorphins which function as non-specific analgesics. Our results supported the hypothesis that those women with sedentary lifestyle indicate higher levels of dysmenorrhea compared to physically active women. In similar studies conducted in Iran, researchers found the very significant role of physical activity in reducing the severity of dysmenorrhea and premenstrual syndrome, which is in line with our findings³.

Another objective of the study was to determine the associations of physical activity level with Mental health status and Quality of life and was found to be significant. During menses, there are alterations in hormonal levels in the body along with it, pain, discomfort, fatigue, lack of energy and also social stigma. The levels of estrogen and progesterone are low at this time. Low levels of estrogen have an effect on the chemicals your brain releases. Studies have highlighted that low levels of estrogen are linked to low levels of serotonin, the "happy chemical" which leads to you feeling satisfied. Excessive bleeding, staying alone (social stigma), will lead to altered quality of life and mental status^(6,7)

CONCLUSION

The overall PA level is 55% in this study. There is also positive influence of PA on general health aspects. Given that a proper understanding of physical activity and doing it on a regular basis can be effective in the health and life of young women and also improving the mental health status and overall quality of life.

Limitations

1. For prevalence study the sample size was very small.
2. In case of occupational status, and educational qualification a much detail analysis can be taken.

Future Recommendations

1. Study with larger sample size could be done.

2. In case of physical activity level, different physical activity like occupational physical activity, leisure time physical activity, and household physical activity could be assessed.

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Conflict of Interest: There is no conflict of interest.

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Ethical Approval: Approved

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